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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/683,924	10/10/2003	Ioan Sauciuc	042390P16836	2221

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EXAMINER	
DATSKOVSKIY, MICHAIL V	
ART UNIT	**PAPER NUMBER**
2835	
MAIL DATE	**DELIVERY MODE**
01/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

Office Action Summary	**Application No.** 10/683,924	**Applicant(s)** SAUCIUC ET AL.	
	Examiner Michael V. Datskovskiy	**Art Unit** 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 13 November 2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 4-8 and 21-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 4-8, 21-23 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. In view of the Appeal Brief filed on 11/13/2007, PROSECUTION IS HEREBY REOPENED. A new Non-Final Rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below.

1/22/08

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 21 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over previously cited Meir (US Patent Application Publication 2005/0174737 A1).

:Meir teaches a computer system, Fig. 5, comprising: a microelectronic die 319 having an integrated circuit formed therein; a thermoelectric module 318 thermally coupled to the microelectronic die 319 so as to pump heat from the microelectronic die when current is provided to the thermoelectric module 318; a cold side plate 317; a hot side plate (heat sink) 315; a cold-side temperature sensor 320 at one side of the thermoelectric module; and a controller 322 connected to the temperature sensor 320 to receive an indication of temperature at the temperature sensor 320 as an input into the controller 322, the controller 322 controlling the current provided to the thermoelectric module based on the input. Meir teaches furthermore the computer system of claim 1, further comprising: an ambient temperature sensor 324 detecting ambient temperature of air distant from the microelectronic die 319 and the thermoelectric module 318, the controller being connected to the ambient temperature sensor 324 to receive an indication of temperature at the ambient temperature sensor 324, the controller 322 controlling current provided to the thermoelectric module 318 based on an input from the ambient temperature sensor 324. Meir teaches furthermore the computer system further comprising: a fan 314 inherently provided with a motor coupled to the fan to rotate the fan so that the fan cools the microelectronic die 319 when power is provided to the motor, the controller controlling power provided to the thermoelectric module and to the motor such that power to the thermoelectric module is limited (It inherently has its limited maximum); and fan speed is accelerated (To its inherent maximum). Meir does not teach that Controller software algorithm is programmed to accelerate fan speed when power to the thermoelectric module reaches a predetermined maximum value.

(Meir teaches (See paragraphs [0117] – [0123] and Figs. 8, 9) that when CPU is in allowed temperature range, TEC power and fan speed are at about 66%, and when CPU temperature is above allowed range, TEC power and fan speed both go to 100%. In this circumstances it would be logically to assume that electronic semiconductor cooling device (TEC) would reach its maximum level faster than a mechanical cooling device (Fan), and therefore, there will be some time threshold, when TEC will already teach its maximum limit and fan will still be accelerated). However, it would have been obvious to one having ordinary skill in the art at the time invention was made to program the controller software algorithm in the device by Meir to accelerate fan speed when power to the thermoelectric module reaches a predetermined maximum value, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955); see also Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382; In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). For more recent case applying this principle, see Merk & Co. inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

5. Claims 22, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meir and further in view of Atkinson (US Patent Application Publication 2005/0204747 A1).

Meir teaches all the limitations of the claims except the computer system of claim 1, further comprising: a vapor chamber between the microelectronic die and the thermoelectric module; and a fluid in the vapor chamber, the fluid being evaporated when heat transfers thereto from the microelectronic die and condensing when heat transfers therefrom to the thermoelectric module. Atkinson teaches a thermoelectrically cooling electronic device 10, Fig. 6, comprising an a heat generating electronic component 44; a thermoelectric module 14; a hot side heat sink 12 mounted on a top of the heat sink 12; and a vapor chamber 16 between the electronic component 44 and the thermoelectric module 14; and a fluid in the vapor chamber, the fluid being evaporated when heat transfers thereto from the microelectronic die and condensing when heat transfers therefrom to the thermoelectric module (see paragraph [0013]). It would have been obvious to one having ordinary skill in the art at the time invention was made to employ a vapor chamber between the microelectronic die and the thermoelectric module, as it is disclosed by Atkinson, in the device by Meir, in order to enhance heat dissipation from the heat generating microelectronic die.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meir as applied to claim 21 above, and further in view of Watanabe (US Patent 6,817,191). Meir teaches all the limitations of the claims except the computer system of claim 2, further comprising: a hot plate thermally coupled to the thermoelectric module, with the thermoelectric module between the microelectronic die and the hot plate; and a hot-side temperature sensor on a side of the thermoelectric module of the hot plate and opposing the microelectronic chip, the controller being connected to the hot-side

temperature sensor to receive an indication of temperature at the hot-side temperature sensor, the controller controlling current provided to the thermoelectric module based on an input from the hot-side temperature sensor. Watanabe teaches a thermoelectrically cooling electronic device, Figs. 1-2, comprising: a hot plate (heat sink) 3 thermally coupled to the thermoelectric module 2, with the thermoelectric module between a cooled component 1 and the hot plate 3; and a hot-side temperature sensor 4 on a side of the thermoelectric module of the hot plate 3 and opposing the cooled component 1, the controller being connected to the hot-side temperature sensor to receive an indication of temperature at the hot-side temperature sensor, the controller controlling current provided to the thermoelectric module based on an input from the hot-side temperature sensor 4. It would have been obvious to one having ordinary skill in the art at the time invention was made to employ a hot-side temperature sensor on a side of the thermoelectric module of the hot plate and opposing the microelectronic chip, the controller being connected to the hot-side temperature sensor to receive an indication of temperature at the hot-side temperature sensor, the controller controlling current provided to the thermoelectric module based on an input from the hot-side temperature sensor, as Watanabe discloses it in the device by Meir, in order to diversify control of the thermoelectric module.

7. Claims 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meir as applied to claim 21 above, and further in view of Richman (US Patent 4,685,081). Meir teaches all limitations of the claims except the computer system of claim 2, further comprising: a junction temperature sensor within the microelectronic die, the controller

being connected to the junction temperature sensor to receive an indication of temperature at the junction temperature sensor, the controller controlling current provided to the thermoelectric module based on an input from the junction temperature sensor. Richman teaches a Peltier junction used for thermal control of solid-state devices comprising a junction temperature sensor 43 within the microelectronic die 21 (col. 3, lines 49-64), the controller 39 being connected to the junction temperature sensor to receive an indication of temperature at the junction temperature sensor, the controller controlling current provided to the thermoelectric module based on an input from the junction temperature sensor 43. It would have been obvious to one having ordinary skill in the art at the time invention was made to employ a junction temperature sensor within the microelectronic die, the controller being connected to the junction temperature sensor to receive an indication of temperature at the junction temperature sensor, the controller controlling current provided to the thermoelectric module based on an input from the junction temperature sensor in the device by Meir, as Richman discloses it, in order to diversify control of the thermoelectric module.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meir in view Richman as applied to claim 6 above, and further in view of Palfy et al (US Patent 6,470,696).

Meir in view of Richman teach all limitations of the claim except the computer system of claim 6, further comprising: an ambient moisture sensor detecting ambient moisture of air distant from the microelectronic die and the thermoelectric module, the controller being connected to h the ambient moisture sensor to receive an indication of moisture at the ambient moisture sensor, the controller controlling current provided to the thermoelectric module based on an input from the ambient moisture sensor. Palfy et al teach a thermoelectric cooler for computer/electronic devices comprising an ambient moisture sensor 13 detecting ambient moisture of air distant from the thermoelectric module, the controller 20 being connected to h the ambient moisture sensor 13 to receive an indication of moisture at the ambient moisture sensor, the controller 20 controlling current provided to the thermoelectric module based on an input from the ambient moisture sensor (see Fig. 4). It would have been obvious to one having ordinary skill in the art at the time invention was made to employ an ambient moisture sensor detecting ambient moisture of air distant from the microelectronic die and the thermoelectric module, the controller being connected to h the ambient moisture sensor to receive an indication of moisture at the ambient moisture sensor, the controller controlling current provided to the thermoelectric module based on an input from the ambient moisture sensor in the device by Meir and Richman, as Palfy et al disclose it, in order to diversify control of the thermoelectric module.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Meir (US Patent Application Publication 2003/0117760A1) and Baba (Japan Patent JP02003028768A), each teaching A CPU cooling device comprising a TEC coupled with a heat sink and with a fan, wherein a controller comprise an algorithm detecting CPU Temperature and providing varying ranges of power to said TEC and fan.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V. Datskovskiy whose telephone number is (571)272-2040. The examiner can normally be reached on 8:30am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayprakash N. Ganghi can be reached on (571)272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MICHAEL DATSKOVSKIY
PRIMARY EXAMINER

01/11/2008

SPE AU 2835 Gandhi Jayprakash